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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,616	12/05/2001	Paul Smith	P 284196 PE WEAR	1946

909 7590 08/05/2003

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EXAMINER

LU, C CAIXIA

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n N .	Applicant(s)	
	10/002,616	SMITH ET AL.	
	Examiner	Art Unit	
	Caixia Lu	1713	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-8, and 10-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Item No. 42,807-8 of Aldrich Catalog, 1998-1999, page 1361 (same as that of page 1360 of 2000-2001 Catalog).

Item No. 42,807-8 of 1998-1999 Aldrich Catalog on page 1361 is a linear low density ethylene (LLDPE) polymer containing 5-10 wt. % of hexene comonomer with melt index of 1.0 g/10 min and density 0.918 and melting temperature of 100-125°C.

According to applicants' disclosure, Item No. 42,807-8 has a melt-viscosity of 4.6×10^3 and wear coefficient of 2.47, both are in the range of those of the instant claims. A skilled artisan would have recognized that Item No. 42,807-8 in the form of pellets must be prepared from a melt extrusion process.

Neither Aldrich Catalog nor applicants have disclosed the average Mn and polydispersity Mw/Mn of Item No. 42,807-8. However, Item No. 42,807-8 has a linear structure, a skilled artisan would have understood that Item No. 42,807-8 must be prepared by a single site catalyst. There, Item No. 42,807-8 is expected to have a narrow polydispersity and, thus, the polydispersity and the number average molecular weight of Item No. 42,807-8 are expected to be in the claimed ranges.

Once a product appearing to be substantially identical is found and a 35 USC 102/103 rejection made, the burden of proof is shifted to the applicant to show an unobvious difference. In re Fitzgerald, 205 USPQ 594. In re Fessmann, 180 USPQ 324. Applicants have not met their burden to demonstrate an unobvious difference between the claimed product and the products of the prior art examples.

Allowable Subject Matter

4. Claims 3 and 20-35 are allowed.
5. Claims 9 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The instant claims are directed to a ethylene polymer with average Mw in the range of 150,000-1,000,000 g/mol and Mn of least 25,000 g/mol, Mw/Mn in the range of 1.3-10 and a wear coefficient of less than $2.4 \times 10^{-4} \text{ mm}^3/\text{mN}$.

Takahashi et al. (US 5,422,061) teaches a ethylene polymer blend with average viscosity molecular weight of 500,000 or more and good wear resistance, those polymer composite can be used for making sliding guides. In the working examples, Takahashi

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disclosed ethylene polymers with average viscosity Mv in the range of 2,900,000 to 300,000.

10-2-03 Applicants' comparative examples have shown (i) when ethylene polymer with molecular weight higher than that of the instant claims, the polymers have a wear coefficient in the range of the instant ^{claim} and (ii) when ethylene polymer with molecular weight lower than that of the instant claims, the polymers have a wear coefficient above the range of the wear coefficient of the instant claims. That is, ethylene polymers do not normally meet the both limitations of the molecular weight and wear coefficient of the instant claims. Based on the demonstration of Table III of the Specification, one can conclude only certain molecular weight fractions with molecular weight distribution close to 1, such as Mw of 490,000 or above with Mw/Mn of 1.1, meet the limitations of the instant claims. Therefore, one would have not expect Takahashi's polyethylene to fall in the scope of the instant claims since Takahashi's ethylene polymer or polymer composite are either have a molecular weight which is too high or a polydispersity which is too broad.

Because the polyethylene in the molecular weight range of the instant claims are much easier to process in conventional melt-molding process such as injection molding, thus, applicant have shown criticality and unexpected results and deemed to be novel over the cited prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (703) 306-3434. The examiner can normally be reached on 9:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for

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the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1193.

A handwritten signature in black ink, appearing to read 'Caixia Lu'.

Caixia Lu, Ph. D.
Primary Examiner
Art Unit 1713

CL
July 30, 2003